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CELLULAR TELEPHONE AND PERSONAL DIGITAL ASSISTANT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a Divisional Application of Ser. No. 10/368,924 filed on Feb. 18, 2003 which was a continuation of 09/846,789 filed May 1, 2000, which was a continuation-in-part of 09/416,168 filed Oct. 11, 1999.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to personal communications systems, including, but not limited to cellular telephones, personal digital assistants, pagers, and internet appliances.

2. Problems in the Art

The present invention relates to personal electronic devices and personal communication systems and many problems associated with such devices. One of the most recognized problems relates to hands-free communication. In voice communication systems, such as cellular telephones, it is more convenient and safer for voice communications to occur without requiring the use of hands. Many attempts have been made at solving this problem, resulting in cords running between headsets and cellular telephones, heavy and bulky headset units, and related problematic solutions. Another problem concerning personal electronic devices and personal communication systems is the increasing complexity of such devices. As technology improves, additional functionality has been given to cellular telephones, personal digital assistants, pagers, internet appliances, and other personal electronic devices. Increasing the complexity of the device generally involves increasing the number of buttons or controls associated with the device or otherwise making a device more hands intensive in operation.

Thus there is an even more pronounced problem when additional functionality is given to a personal digital assistant, cellular telephone, or related personal electronic device when that personal electronic device has been designed to provide additional functionality. The number of controls is increasingly providing greater difficulties in operating the device and there are greater difficulties in accessing the controls or buttons on the device. This is particularly true where some of the controls, such as a touch screen are protected.

Therefore, it is a primary objective, feature, or advantage of the present invention to provide an apparatus, and system which improve upon the state of the art.

It is another objective, feature, or advantage of the present invention to provide a system and apparatus of personal communication.

It is another objective, feature, or advantage of the present invention to provide a system and apparatus of hands-free communication.

It is a further objective, feature, or advantage of the present invention to provide a system and apparatus having accessible access to user controls.

It is a further objective, feature or advantage of the present invention to provide a system and apparatus that provides simplified access to a touch screen display.

It is a further objective, feature, or advantage of the present invention to provide a personal electronic device that includes a cellular transceiver and a personal digital assistant.

It is another objective, feature, or advantage of the present invention to provide a system and apparatus that includes a cellular transceiver, a personal digital assistant, and a pager.

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It is a further objective, feature, or advantage of the present invention to provide a personal electronic device with a telephone keypad and a touch screen display, the telephone keypad and the touch screen display being simultaneously accessible.

These and other objectives, features, or advantages of the present invention will become apparent from the specification and claims.

BRIEF SUMMARY OF THE INVENTION

One aspect of the present invention relates to the physical configuration of a personal electronic device. The personal electronic device has a first body and a second body. In addition, there is means for connecting the first body to the second body. There is means for slidably moving the first body with respect to the second body and means for pivotally moving the first body with respect to the second body. This configuration of the present invention provides advantages over flip open-type devices. For example, when the first body has a display and the second body has a keypad, when in a closed position the personal electronic device allows the user access to the buttons on the keypad. In an open position the user has access to both the keypad as well as the display such as a touch-screen display.

Another aspect of the present invention is a system which includes the personal electronic device of the present invention in addition to an earpiece worn by the user. The earpiece may communicate with the personal electronic device through a short-range transceiver. The earpiece may include a bone conduction sensor and an air conduction sensor.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not limitation in the figures of the accompanying drawings, in which like references indicate similar elements and in which:

FIG. 1 is a diagram of a personal electronic device worn by a person according to the present invention.

FIG. 2 is a representation of the earpiece of the present invention fitted on the ear.

FIG. 3 is a diagram of the layout for the personal electronic device of the present invention in a closed position.

FIG. 4 is a view of the personal electronic device of the present invention in a closed position.

FIG. 5 is a top view of the personal electronic device of the present invention in an open position.

FIG. 6 is a top view of the personal electronic device of the present invention in a closed position.

FIG. 7 is a diagram of the personal electronic device with a slide hinge.

FIG. 8 is a diagram of the personal electronic device with the telephone transceiver portion positioned at an angle relative to the PDA portion.

FIG. 9 is a diagram of the personal electronic device in a closed position.

FIG. 10 is a diagram of a hinged embodiment of the personal electronic device in an open position.

FIG. 11 is a diagram of a hinged embodiment of the personal electronic device in a closed position.

FIG. 12 is a diagram of a personal electronic device according to another embodiment of the invention.

FIG. 13 is a diagram of a slidably mounted personal electronic device of the present invention in closed position.

FIG. 14 is a diagram of a slidably mounted personal electronic device of the present invention in a tilted position.